

hcm NEWS 4/2019



Change of spokesperson at the HCM

many thanks

to Karl-Theodor Sturm!

On 30th September Karl-Theodor Sturm's time in office as spokesman for the Hausdorff Center has come to an end. These were seven exciting years of outstanding success: In addition to the absolute highlight, the awarding of the Fields Medal to Peter Scholze in Rio de Janeiro in 2018, it was especially the cluster's new, successful application in regard of the newly launched Excellence Strategy – and to top it all off the appointment of the University of Bonn as a University

of Excellence. It is in particular noteworthy, that during the highly time consuming period as a spokesperson Karl-Theodor Sturm himself received one of the renowned ERC Advanced Investigator Grants (2015, Wolfgang Lück received the other one in 2014)!

Already at the beginning of his time in office he had set himself the objective to ensure HCM's future beyond the end

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of the German federal and state governments' Excellence Initiative. In order to influence the necessary political decisions on behalf of HCM, he built a network of contacts to policymakers. Several ministers and state secretaries from the federal and state governments visited the HCM, and numerous federal and state parliament members got to know the HCM on site or during delegation visits to Berlin. (Nearly half the speakers in the Bundestag's debate on the amendment of Art. 91b GG had been briefed by HCM.)

His objective as a spokesperson has always been to shift the HCM's position from Germany's top to world class. A project that he has undoubtedly achieved - not only through the successful recruitment of world-renowned mathematicians, but also through an increased investment in the training of excellent young talents. An important step was the establishment of an in Germany unique postdoc program, the Hausdorff School, and the increasing involvement of HCM in a world-wide training network resulting in the founding of the Global-MathNetwork. He additionally also developed innovative interdisciplinary concepts locally by creating the Interdisciplinary Research Units.

We are very grateful to Karl-Theodor Sturm - and extremely glad that he remains with us as advisor and outstanding mathematician. He is now followed by an „old hand“: Wolfgang Lück, formerly director at HIM from 2011 to 2017. Under the leadership of the 62-year-old Leibniz Prize winner and former President of the German Mathematical Society, the HCM can confidently look forward to many other successful years. We wish Wolfgang Lück good luck and much success for this new challenge!

Welcome



Gregorio Curello joined the HCM as a Hausdorff Postdoc in August. Earlier this year he completed his PhD at the University of Oxford. He specializes in Information Economics and Game Theory.



Yajnaseni Dutta joined HCM as a Hausdorff Postdoc in September this year. She is part of the complex geometry group. Prior to moving to Germany, she finished her doctoral degree in Mathematics at Northwestern University in the United States. Her research interest lies in the geometry and singularities of higher dimensional complex algebraic varieties from the perspective of birational geometry and Hodge theory.



Eveliina Peltola has been working since September this year as a Bonn Junior Fellow at the HCM. She obtained her PhD in Mathematics from the University of Helsinki in 2016. From 2016 to 2019 she was a Postdoc at the University of Geneva. Her research field is Mathematical Physics - in particular, she works on problems related to statistical physics models and conformally invariant systems.



Lenka Slavíková has been working as a Hausdorff Postdoc at the HCM since September this year. She obtained her PhD degree in 2016 from Charles University in Prague, Czech Republic, where she has been an Assistant Professor until recently. Before returning to Prague, she held a postdoctoral position at the University of Missouri (USA). In her research she focuses on harmonic analysis and the theory of function spaces.



Leonardo Tolomeo has been working as a Hausdorff Postdoc since September. In July 2019, he was awarded a PhD at the University of Edinburgh, for his work in dispersive stochastic PDEs. His other interests include deterministic dispersive PDEs and harmonic analysis on Lie groups.

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Peter Scholze received the Order of Merit of the Federal Republic of Germany

What an honor for Peter Scholze! He received the „Bundesverdienstkreuz“ - more precisely the “Große Verdienstkreuz” (Great Cross of Merit) - from Germany’s Federal President Frank-Walter Steinmeier. The Federal President’s Office declared: „Peter Scholze is regarded as a luminary in the field of Arithmetic Geometry. He sheds new light on key questions that generations have tried to solve and for problems that were previously considered as insoluble. Peter Scholze is a role model for future generations of his subject.“ We fully agree with that.



Karl-Theodor Sturm is plenary speaker at the ECM 2020

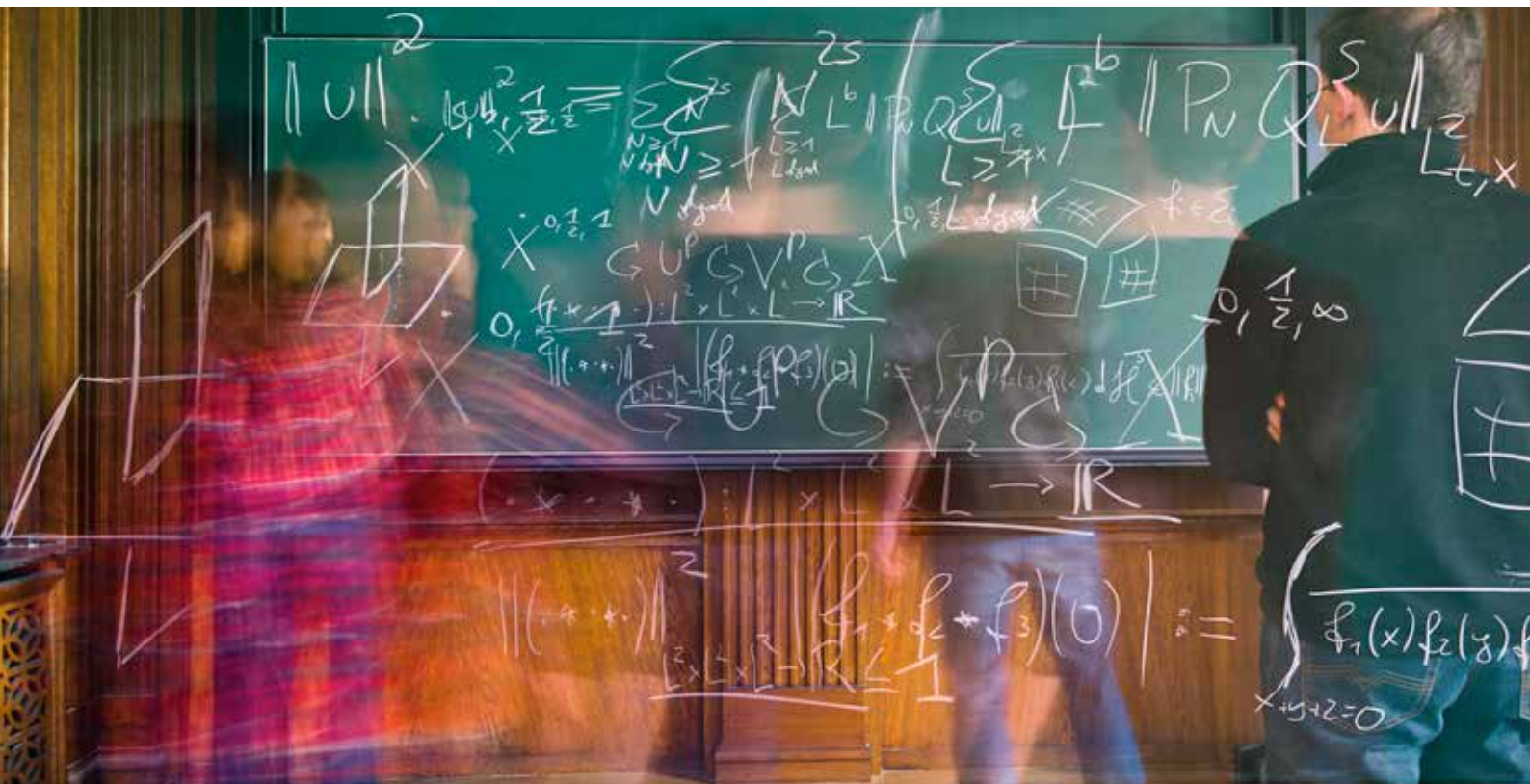
Karl-Theodor Sturm from the Institute of Applied Mathematics was invited by the European Mathematical Society as a plenary speaker at the next European Congress of Mathematics, the 8th ECM, taking place in Portoroz in 2020. A few years ago, Karl-Theodor Sturm was awarded a European Research Council Advanced Grant. Since the beginning of the four-yearly ECM conferences in 1992, Karl-Theodor Sturm is the sixth mathematician from Bonn to receive such a prestigious invitation.

Lillian Pierce received the US Presidential Early Career Award

The HCM Bonn Research Fellow Lillian Pierce is one of the recipients of the Presidential Early Career Award for Scientists and Engineers (PECASE). The PECASE is the highest honor bestowed by the United States Government to outstanding scientists and engineers who are beginning their independent research careers and who show exceptional potential for leadership in science and technology. In 2021, Lillian Pierce will organize the trimester program „Harmonic Analysis and Analytic Number Theory“ at the Hausdorff Research Institute for Mathematics.



HAUSDORFF CALENDAR



Workshop

SPDE day – recent progress on quasilinear equations

Activity within the Junior Trimester Program

18th October

Workshop

Singular SPDEs and Related Topics

Activity within the Junior Trimester Program

21st to 25th October

Plücker Lecture

Frank den Hollander: Exploration on Dynamic Networks**21st October**

Public Lecture

Martin Hairer: Zufall und Wahrscheinlichkeiten im Kleinen wie im Großen (in German)**22nd October**

Hausdorff Colloquium

Jani Lukkarinen: Mathematical puzzles in kinetic theory
Monica Visan: Recent progress on well-posedness for integrable PDE**23rd October**

Toeplitz Colloquium

Renate Tobies: „im Geiste Kleins der Jugend die eminente Kulturbedeutung der Mathematik und ihrer Anwendungen vermitteln“**4th November**

Hirzebruch Lecture

Sergey Fomin: Pentagramma Mirificum**8th November**

Workshop

Stochastic Fluid Dynamics

Activity within the Junior Trimester Program

11th to 15th November

Hausdorff Colloquium

Mike Hopkins/Terry Lyons**20th November**

Toeplitz Colloquium

Thomas Bedürftig: Über Grenzwerte und Infinitesimalien, ihre Geschichte und Gegenwart**2nd December**

Workshop

Problems of roughness, geometry and random fluctuations

Activity within the Junior Trimester Program

9th to 12th December

HAUSDORFF EVENTS



A week for high-school students

More than 80 students (more than in the last years!) got a taste of university math during our "Schüler*innenwoche" under the motto "Math: More than Calculus". The lectures were tailor-made for high-school students. They dealt with "Shortest Links using Algorithms" (Ulrich Brenner), "Spherical Astronomy" (Ysette Weiss/Rainer Kaenders) and "The World of Chance" (Margherita Disertori). We also offered workshops for programming and LaTeX, a rally, a visit to the Arithmeum, student advice and much more. Let's hope that many of the students present will actually decide to study math in Bonn...



Bonn Math Tournament

Despite a climate strike in Bonn on the same day, about 350 students from 70 different schools located in Bonn, the Rhein-Sieg region, as well as other parts of North-Rhine Westphalia, visited our big Mathematics Team Tournament. Each school sent their top five students, who competed against the other schools and - in the first part of the competition - against two additional "dream teams": the "HCM dream team" consisting of Sergio Conti, Christoph Thiele, Stephan Hougardy, Susanne Armbruster, Carolin Kaffiné and Pavel Zorin-Kranich as well as against the "teacher dream team". >>



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The „math pros“ were only slightly better than the best school team. The second competition part dealt with „Mathematics in Space“ and the material had previously been prepared by Carl-Peter Fitting in volunteer work and with much passion.

As a star guest we invited Insa Thiele-Eich, a scientist at the Meteorological Institute in Bonn and presumably the first German woman in space. In an interview with Thoralf Räsch and Julia Schuster, the astronaut told the students how diffi-

cult the selection rounds were on the hard way to her dream job and what prejudices women still have to face in this area. The trophy - a so-called Pythagorean tree – was won by the five students of the CJD Christopherusschule Königswinter. They are now looking forward - as well as the second and third placed teams and the winning teams from the Netherlands and Belgium - to a trip to Bochum. Among others, they will visit the Planetarium.

Mathematical Walks

Mathematics can be experienced everywhere. We have developed „Mathematical Walks“ throughout Bonn, so that pupils and students can discover mathematics outside the classroom as well - by measuring, counting, drawing and calculating with real objects in the city with topics according to the school curricula. At the end of September we and the „General-Anzeiger“ accompanied pupils of a catholic boys' school in Bonn on such a mathematical walk. „Scene of Math“: the fountain in front of the „Sterntor“. For safety reasons, the fountain is heaped up with sand in November during the pre-Christmas season. How many kilos of sand are needed and how often does a truck driver have to come by? The boys solved this highly practical problem while having a lot of fun! This unit has been developed by the math teacher trainee Julia Schuster.



www.mathematics.uni-bonn.de/mathematik-in-bonn/schulportal/spaziergaenge



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“Math and Music” during the project week “Götterfunken”

On the second day of the project week „Götterfunken“ at the Tannenbusch-Gymnasium, a cooperation project with the University of Bonn, everything revolves around math and music - and we were (of course) involved. With our three hands-on workshops „Mozart’s Dice Game“, „Is Good Sound Measurable?“ and „Monochord - Experiencing Sounds“, we delighted young and old visitors on all three days. Thoralf Räsch explained to the high-school students and teachers in his lecture „Experiencing music with mathematics - how Fourier encodes sound in an MP3 player“ the basic principle of Fourier analysis. In addition, he illustrated how to digitally encode sound and which data one can omit - with almost no loss - when storing the data (keyword: auditory masking).



HAUSDORFF MIXED



Bonn’s mathematics students with a sensational second place at IMC

What a success for our Bonn math students! At this year’s International Mathematics Competition for University Students (IMC) in Blagoevgrad (Bulgaria), held from July 28 to August 3, the Bonn team was placed second, making it the world’s most successful university beaten only by the Israeli national team. The International Mathematics Competition has been taking place annually since 1994. No less than 360 students from all over the world attended this year - more than ever before. The team of the University of Bonn, consisting of Ferdinand Wagner (rank 6, 1st prize), Adrian Riekert (rank 9, 1st prize), Tim Santens (rank 19, 1st prize), Martin Drees (rank 84, 1st prize), Sebastian Meyer (rank 93, 2nd prize) and Federica Bertolotti

(rank 240th, 3rd prize) also achieved outstanding positions in the individual ranking. The University of Bonn was followed by the National Research University HSE in Moscow and the University of Cambridge on subsequent places. This success is no coincidence: in recent years, most students of the Bonn team had already represented Germany at the International Mathematical Olympiad (IMO) for high-school students. The team was supported by the Hausdorff Center for Mathematics (HCM), and we reported in detail on our social media channels about this competition. Congratulations to Ferdinand, Adrian, Tim, Martin, Sebastian, Frederica – and of course to our very committed team captain Lars Munser.

Shanghai ranking



As always in the last years, the Bonn mathematics and economics achieved outstanding results in the Shanghai ranking: Mathematics in Bonn is ranked 30th worldwide and has thus improved on the previous year by six ranks being the first in Germany. The nationwide leadership position is also held by Bonn's economics achieving the 35th rank worldwide.

Parent-child room at the HIM

To attract the best scientists worldwide, we actively seek to improve the working conditions of young mothers and fathers. Our Hausdorff Research Institute for Mathematics (HIM) often hosts young guest researchers with small children, especially during Junior Trimester Programs. To make their job easier, we have now set up a parent-child office in HIM. It has already been successfully tested during the workshop "Women in Topology". This was worth a report to the Bonn General-Anzeiger.



Peter Scholze appears in a school textbook

Mathematicians are usually - if at all - mentioned only posthumously in school textbooks. But with Peter Scholze everything is different. He appears as a role model for young people in the book "German as a Foreign Language" by the Ernst Klett Sprachen-Verlag, which will soon be published in the Swiss Romandie.

IMPRESSUM

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